Changes in Flowering Times in the WSU Woods

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Intro

Many studies have shown flowering patterns and other climate-based phenomena to be in flux. I wish to determine whether changes in first flowering dates can be shown in the WSU woods.

Methods

Beginning with my first year at WSU (1979), I have been recording natural history notes of the woods and other parts of the WSU main campus. One important set of notes deals with flowering times. Because I taught a botany class in the spring for most of my time here and because that class included identification of wild plants, I have especially good notes on spring flowering times of herbaceous and shrubby species. I visited the woods once or twice a week most springs. My notes are unlikely to have caught the very first flowering day but are close for most species. I went through my notes from 1980-2019 and noted the first time each year I found a given species in flower. Those dates are the basis for the results in this presentation.

Results overview

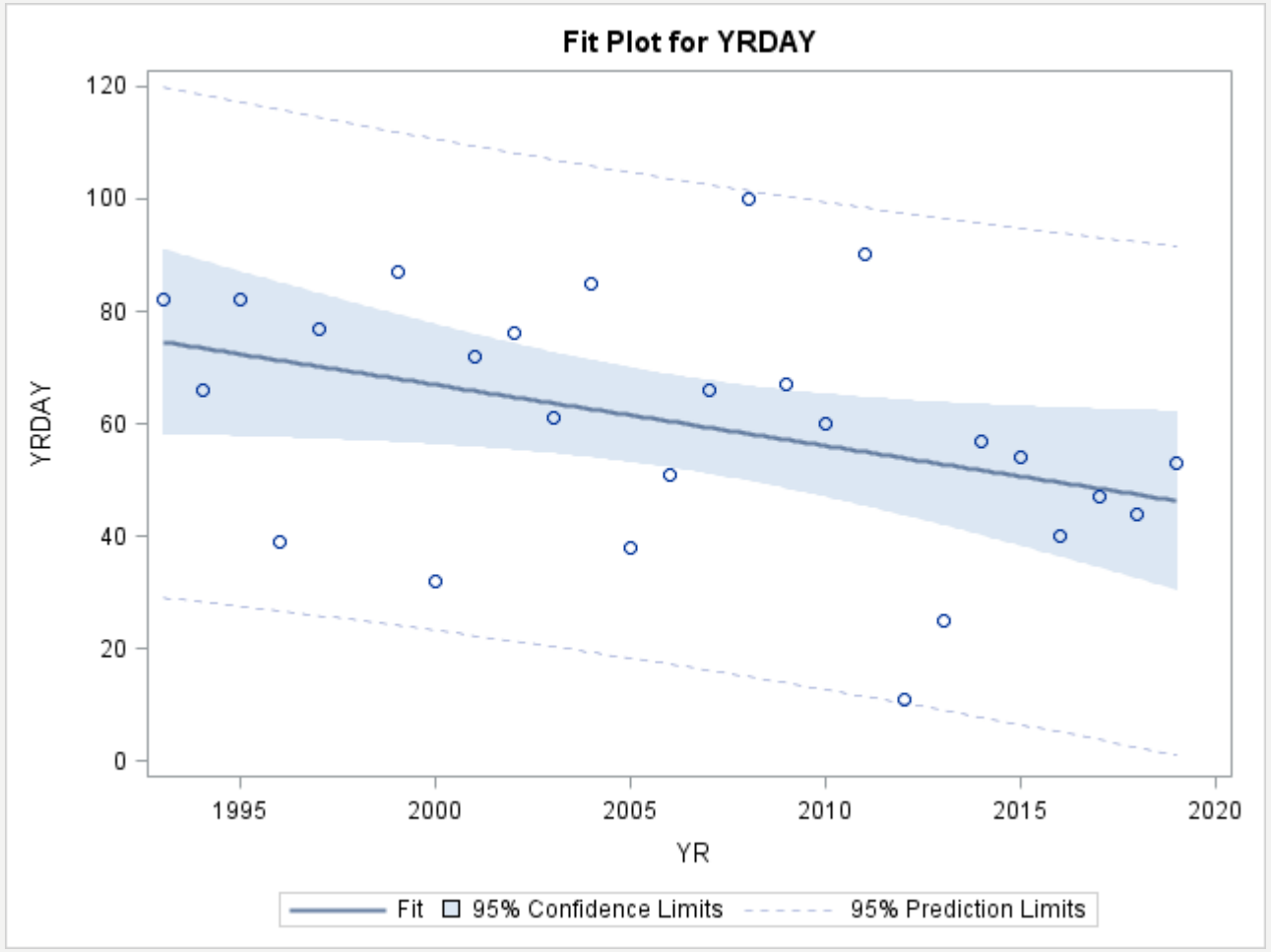
I looked at flowering times for 44 plant species. Some were recorded every year. Some were recorded about half of the years (minimum 18 yr). Missing years occurred because I did not find the plant species some years or because deer browsing had made flowering very rare more recently for several species.

Based on correlations I found 7 species to be blooming significantly earlier and none significantly later. Counting nonsignificant results,

33 species bloomed earlier overall
11 species bloomed later

The following slides highlight the seven species showing significant changes. Note both the variation and the direction of the lines.

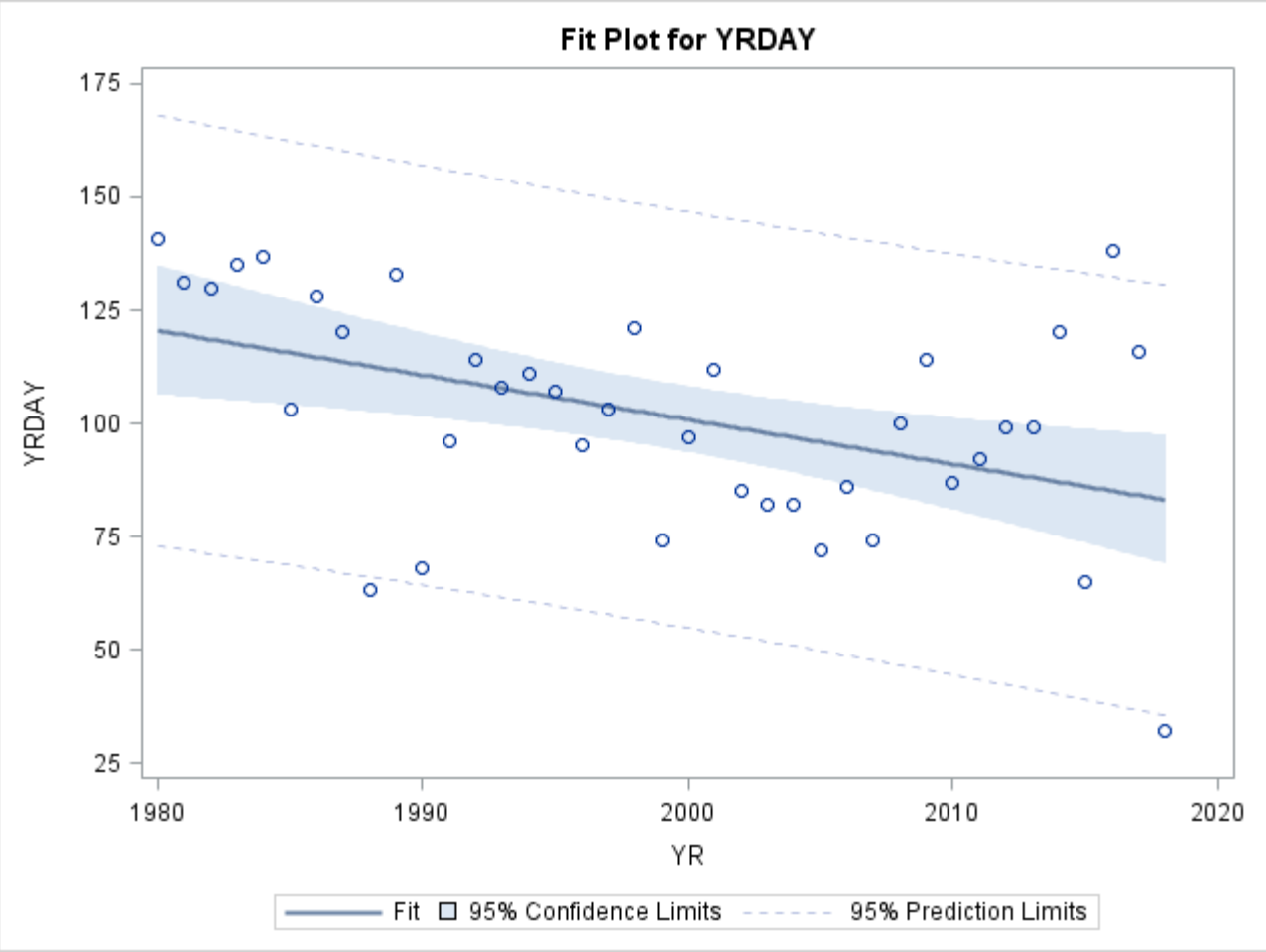
Winter aconite = *Eranthis hyemalis*



Change of about 1 day a year.

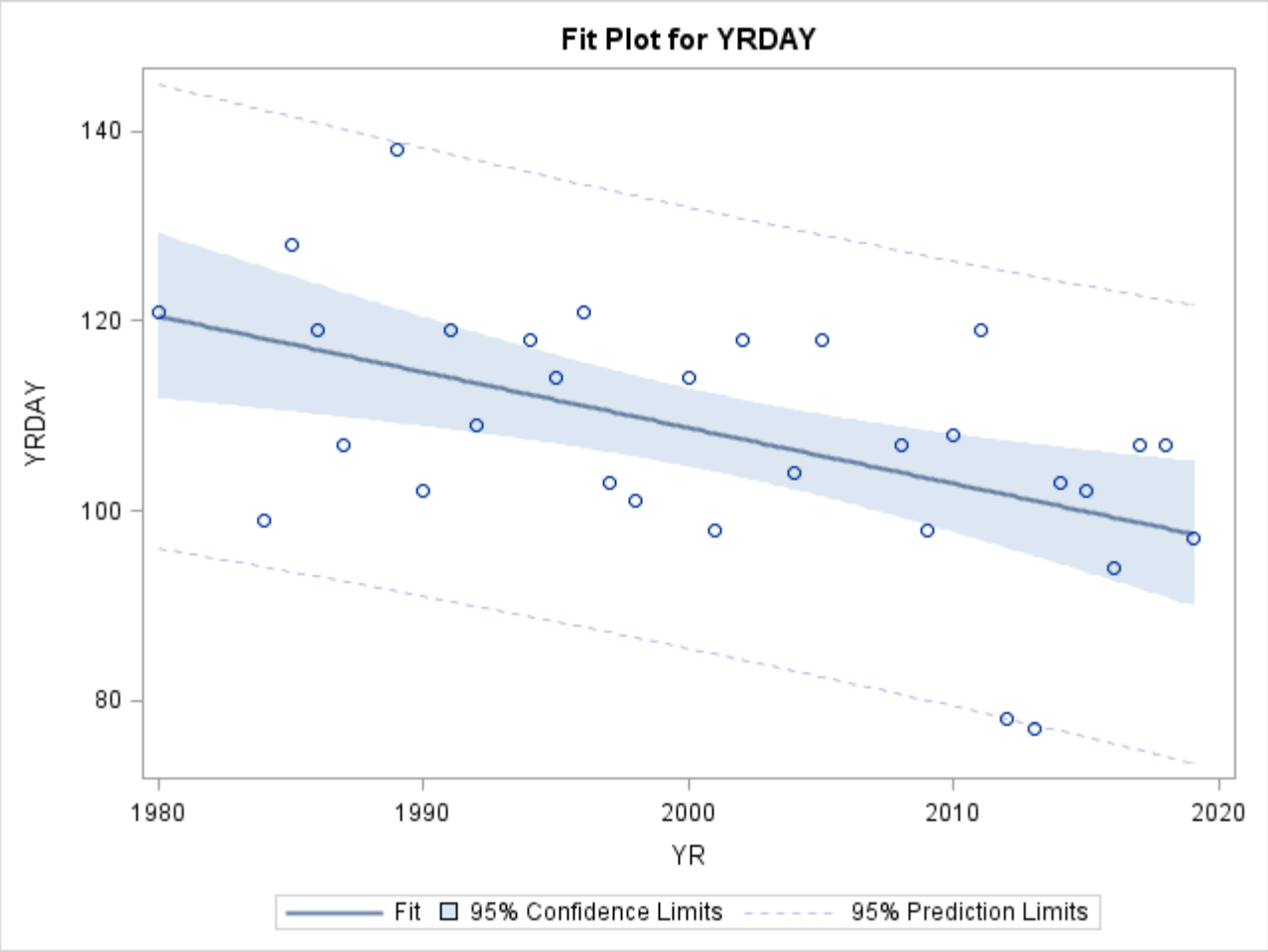
For all these figures, the y-axis is the number of days into the year that the first flower was observed; the x-axis is the year.

Mouse-ear chickweed = *Cerastium vulgatum*



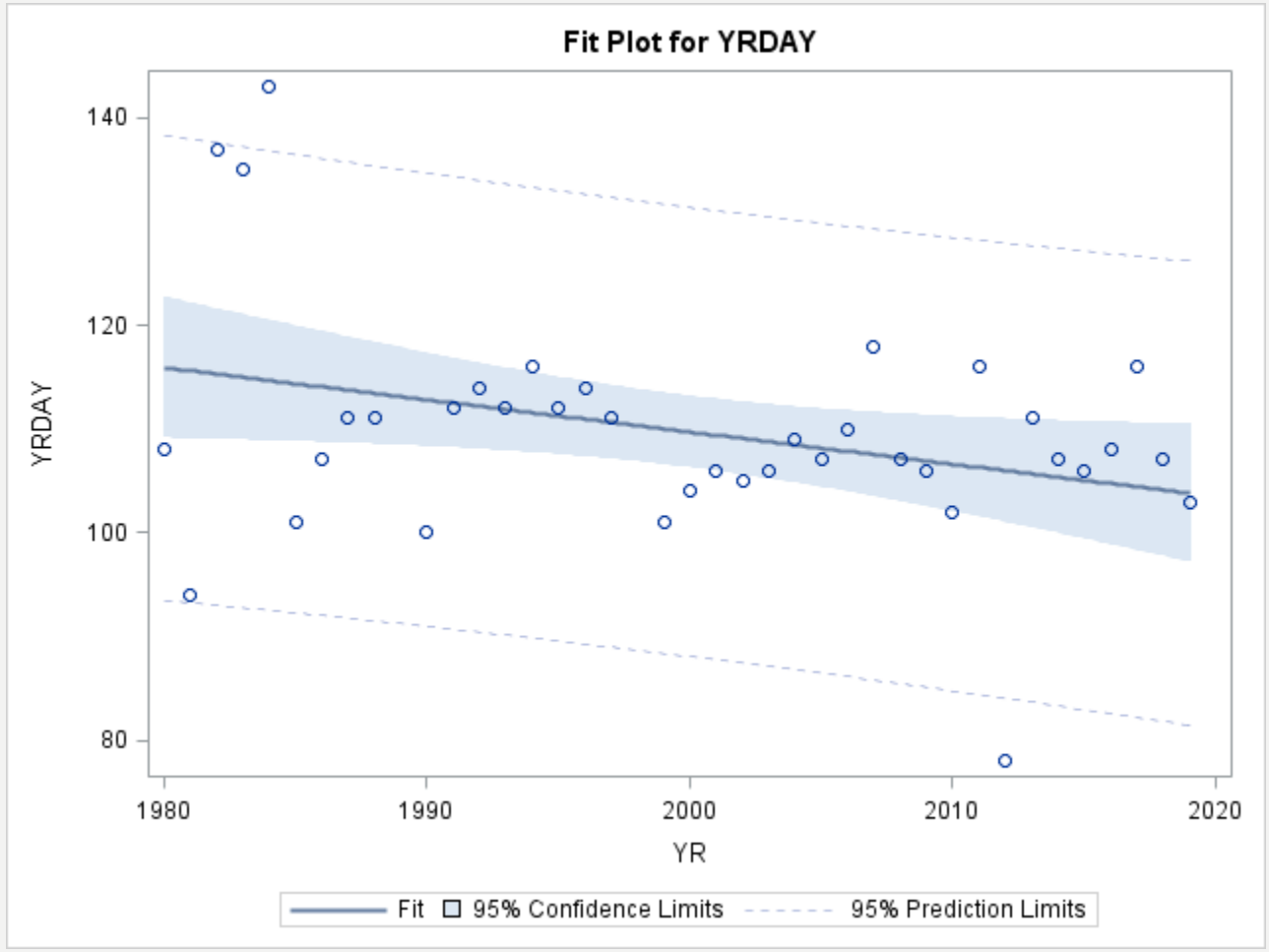
Change also about one day a year

Yellow corydalis = *Corydalis flavula*



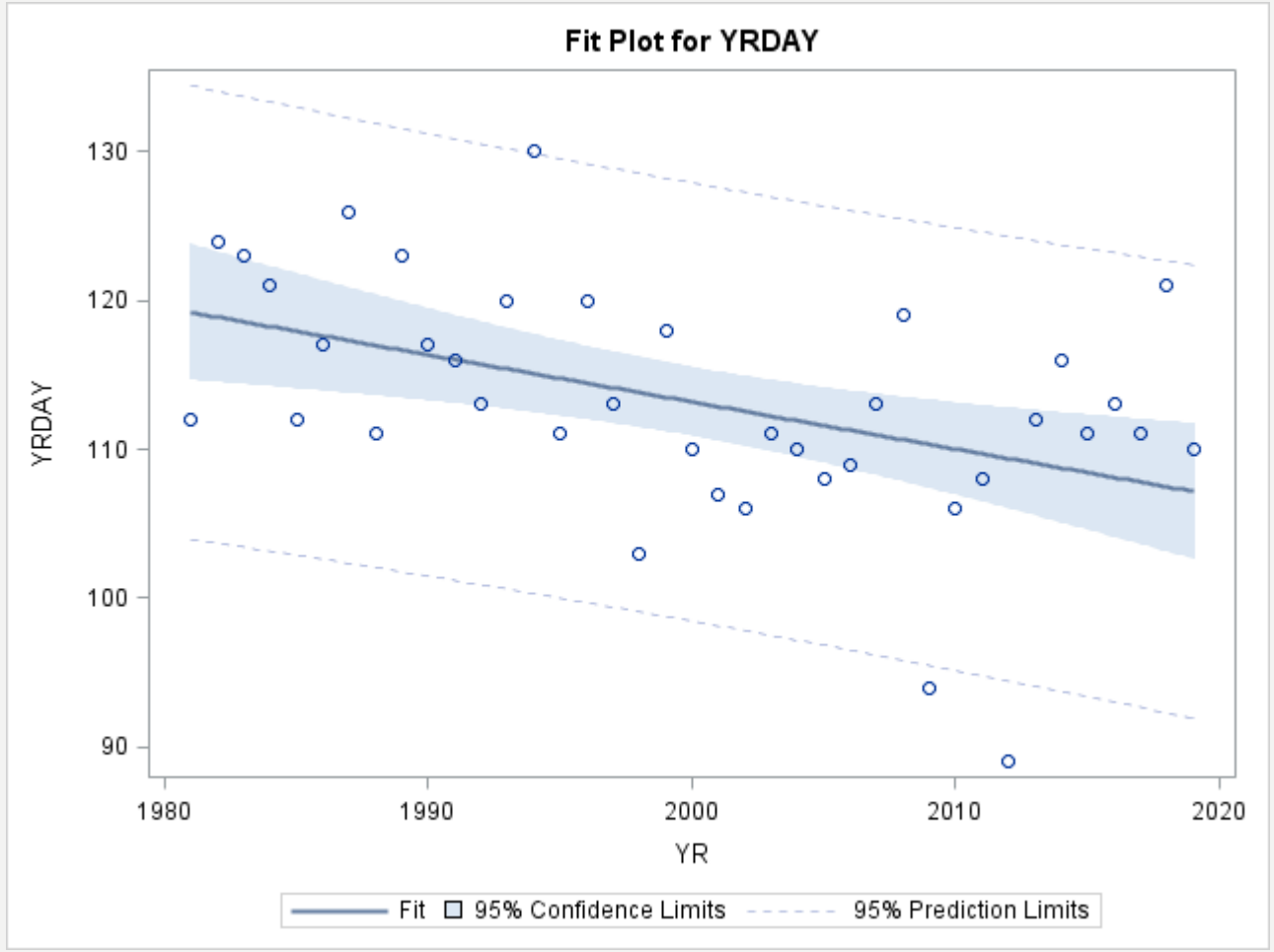
Change 0.6 days/yr

Blue cohosh = *Caulophyllum thalictroides*



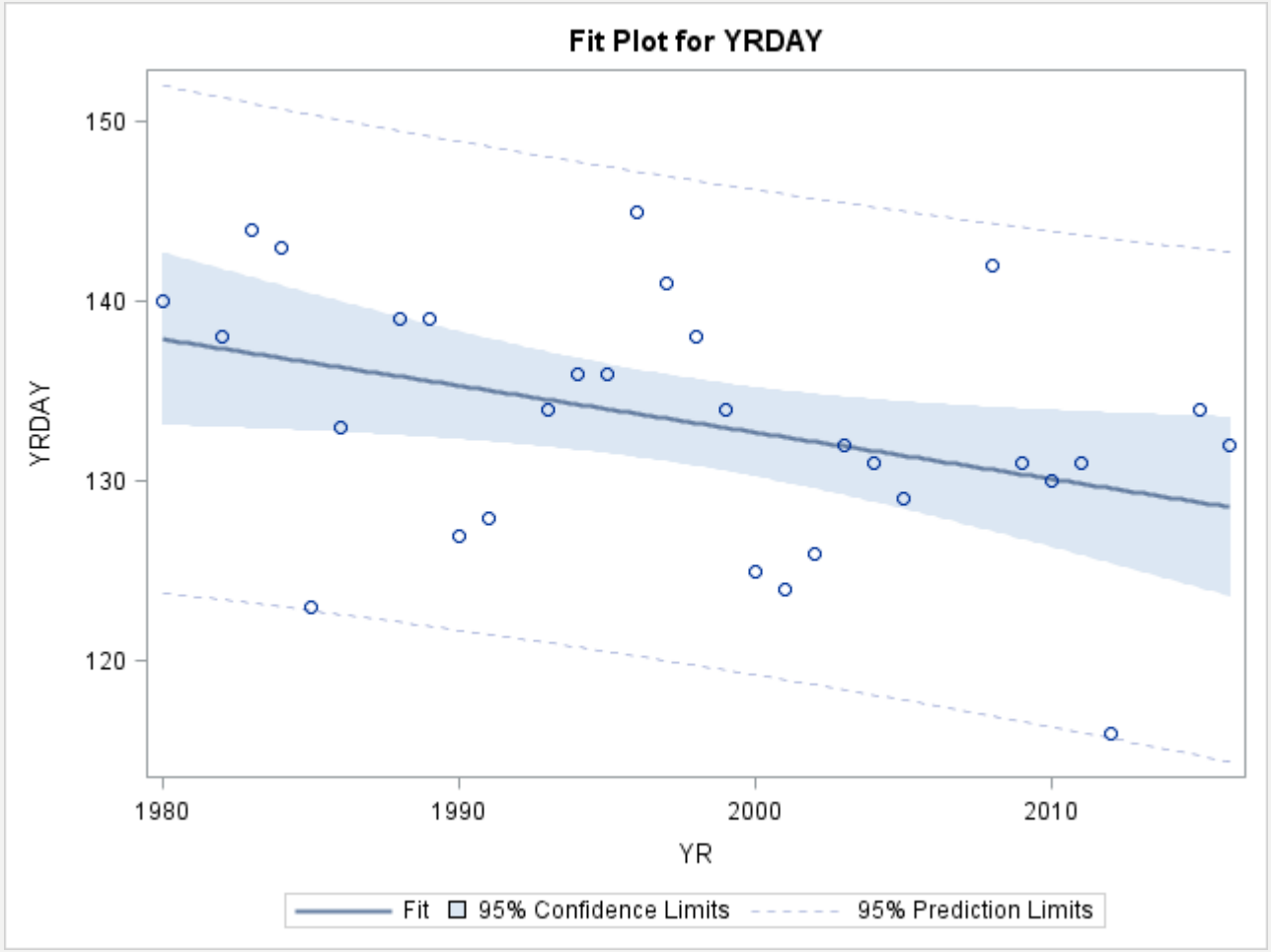
Change 0.3 days/yr

Jack-in-the-pulpit = *Arisaema triphyllum*



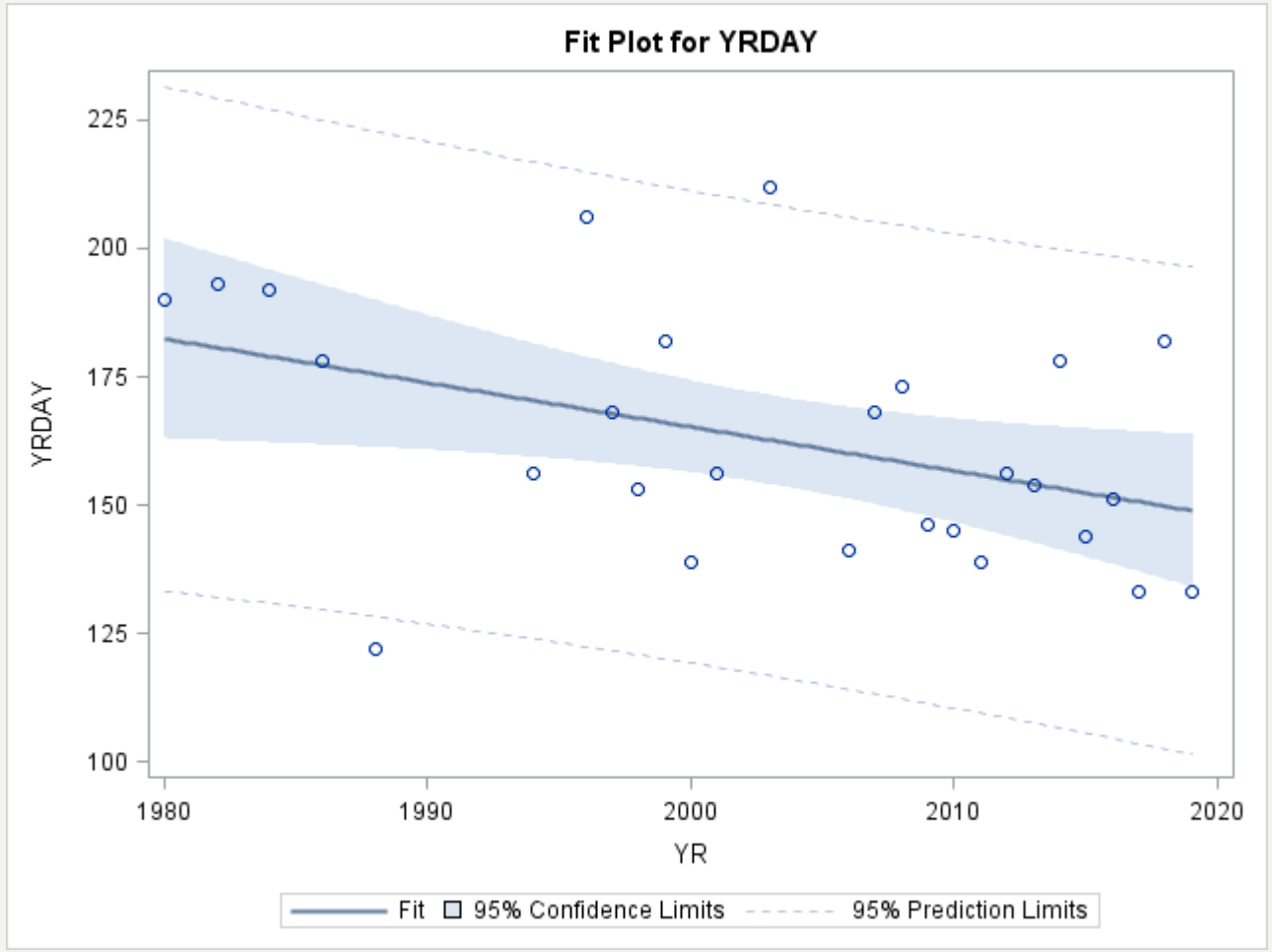
Change 0.3 days/yr

Virginia spiderwort = *Tradescantia virginiana*



Change about 0.3 days/yr

Scarlet pimpernel = *Anagallis arvensis*



Change 0.9 days/yr

SUMMARY

The results were less striking than I anticipated but still show a pattern of earlier flowering dates for the flora overall and especially for several species.

Species show different patterns. In some sense the variations are more interesting than the overall pattern.

Because not all species change in the same way, animal species that require more than one plant species for some part of their lifecycle may find it difficult to track different species at the same time.